



3635  
1PW

Dear Examiner, Mr. Robert Canfield,

Osaka, 6/23/2005

I am a patent applicant with following attributes.

Application No.	10/084,072
Filing Date	02/27/2002
First Named Inventor	Kiichi Yatani
Confirmation No.	5743
Examiner	Canfield, Robert
Art Unit	3635

I received your " Notice of Abandonment " dated 05/17/2005.

Reading your " Notice ", I am very suspicious about the contents of your paper.  
Because, it does not refer to my " Remarks " mailed on 04/11/2005 and " Amended  
Specification " mailed on 08/30/2005 to my former Examiner Mr. Kevin McDermott  
Which I would like to enclose here in this letter.

Did you sincerely examined above mentioned two documents?

I am wondering how American Patent and Trademark Office succeed the important  
documents of applicant from former examiner ( Mr.Kevin Macdermott) to present  
Examiner (Mr. Robert Canfield ),

I would like to ask your honest reply on this matter.

Sincerely Yours,

Kiichi Yatani

*Kiichi Yatani*



Application Number: 10/084, 072

Group Art Unit Number: 3635

Filing date: 02/27/2002

Name of the examiner who prepared the most recent office action: Mr. Kevin McDermott

Title of invention:

SUPPORT STRUCTURE FOR ISOLATING  
EARTHQUAKE MOTIONS

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REMARKS

Some Differences between Mr. Gregory R. Brotz's  
DAMPENABLE BEARING (Pat. No. 6, 116, 782) and  
my invention (SUPPORT STRUCTURE FOR ISOLATING  
EARTHQUAKE MOTIONS

Dear Mr. Kevin McDermott,

Thank you for your kind office action dated  
March 8, 2004.

I carefully and thoroughly read it and then  
would like to appeal to you that there are  
some differences between Mr. R. Brots' DAMPENABLE  
BEARING and my invention as follows. (continue  
next pages)

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Differences between two inventions

Mr. Gregory R. Brotz' Patent (Pat. No. 6/116,782)	My invention Appl. No. 10/084, 072
There must be frictions between pressure receiving support bearings.	There is no frictions between large steel balls and small steel balls. They move simultaneously.
There is no free movement to prevent friction of pressure free balls.	Pressure receiving support balls are moved by pressure applying balls, hence no linkage energy is generated.
Object of generation of linkage energy is a structure.	There are no frictions between each balls in which small balls move all directions to make no frictions.
Employed partition board to prevent frictions would generate friction power, by which linkage energy is generated.	There are no objects to prevent free movement of pressure receiving support balls.
There is uncertainty on how linkage movement generated in case of the M. 8 earthquake.	Linkage movement range between column and pressure receiving steel concrete of fundamental hoop is set to be 80cm+80cm in all directions in which spherical  play as shockabsorber.



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To the Commissioner for patents;

I wish to express my hearty thanks for your  
kind treatness on my patent application in  
details.

Your official actions were sent to me twice  
since my application paper was filed in  
your office on Feb. 27, 2002.

Copies of U. S. patent references were very help-  
ful to me to understand prior arts similar to my  
invention.

After careful consulting above cited U. S. patent  
references I came to distinguish differences  
between Mr. Gregory R. Brott' invention which is  
resemble closely in their structures.

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Title of invention:

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I am now enclosing the different points  
in details between above said two inventions  
expecting your cordial understanding.

The full text of amended specification will  
be filed in your office accordingly after your  
permission.

Waiting your kind next official action,

Very truly yours,

Date: April 12, 2004

Applicant's name: Kiich Yatani

Signature: Kiich Yatani



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Group Art Unit Number; 3635

Filing date; 02/27/2002

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Amended SPECIFICATION

SUPPORT STURCTURE FOR ISOLATING EARTHQUAKE  
MOTIONS

BACKGROUND OF THE INVENTION;

The present invention has to do with a support structure for isolating earthquake motions, and more particularly, to a structure to prevent a chain bibrations of the structure from earthquake and/or wild storm such as hurrican etc.

Heretofore, conventional earthquake-proof constructions are based on methods to alleviate gearing of earthquake motions by intermediately connecting elastic materials such as springs, rubber, lead, and balancer etc. between said

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foundation and bottom of structure.

Present invention is to provide another unique  
method to isolate linkage vibration of the  
earthquake and wild storm to above upper part of  
a structures taking advantages of friction-  
less nature in point contact rolling of a number  
of large and small steel balls rolling in point  
contact.

#### SUMMARY OF THE INVENTION:

The present invention is designed was made to  
put a constructions on a collective block of fri  
ctionless large and small steel balls.

Explaining my invention in more detail, the

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device is designed to interpose large and small balls between pressure-receiving spherical curved steel plate and pressure-applying spherical curved steel plate surfaces as shown in annexed drawings (Fig. 2-A~Fig. 2-C), hence transmission of earthquake motions are isolated by above said rolling of two types of balls interposed between the two curved spherical surfaces as soon as earthquake occurs. This is the case just like the case of a ship on the water, in which we have no earthquake feeling since trembles are isolated by allowing the waving water to receive and transform them into rolling forces of the water wave.

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A preferred form of the present invention is  
illustrated in the accompanying drawings in  
which;

Fig. 1 is a plan view of the invention showing a  
foundation hoop trembled from the east to the  
north direction.

Fig. 2-A is a sectional view of a composition of  
fundamental foundation hoop, a column, and a  
foundation showing a frictionless slide of the  
invention.

Fig. 2-B is a sectional view of a main portion  
of the invention where the large and small balls  
arranged between two spherical steel plates  
showing a frictionless slide part of the inven-  
tion.

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Fig. 2-C is a enlarged sectional view of the  
same portion of the invention where large balls  
and small balls are shown in large scale.

Fig. 2-D is a sectional view of a foundation por-  
tion with a colum in image.

Fig. 3 is a imaginary view of a linkage movement  
of a foundation hoop when an earthquake occurs.

Fig. 4 is a perspective view of a sliding frame  
for sliding balls when earthquake motions were  
isolated.

Fig. 5 is a perspective view of the hoop of the  
invention.

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Fig. 6 is a perspective view of the hoop of the  
invention.

Fig. 7 is a perspective view of the portion which  
closed for large balls and opened for small  
balls.

Fig. 8 is a sectional view of press working of  
a concave curved surface and a convex curved  
surface.

Fig. 9 is a partial perspective view of a holes.

Fig. 10 is a partial perspective view of a fric-  
tionless sliding concave portion.

Referential numerals in the drawings;

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2--connecting bolts of for conncting a convex  
curved surface and with concave curved surface

3--pressure-receiving large steel balls (10.318mm9 in  
usual case)

4--rolling unifying small balls (8.73mm in usual case) in  
point contact

5--concave steel plate with pressure-receiving  
surface

6--convex steel plate with pressure-applying  
spherical surface

7--ball aligning frame

8--sodium silicate

9--column

10--liquid replenishing pipe

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11--liquid sealing packing

12--polybinyll chloride ball cover

13--concrete covering all the surface of top

and bottom steel plate

14--connecting steel frame for hoop tightening

15--connecting steel frame for hoop-tightening

16--iron and steel reinforced concrete block

17--bolts for pressing ball surface

18--pressing bolts and nuts

19--tightening portion for balls

20--concrete frame

21--pressing slot

22--iron frame for ball surface

23--foundation hoop (same as numeral 1)

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24--hoop tightening frame

25--ball sliding block

#### DETAILED DESCRIPTION OF THE INVENTION;

According to my invention, large steel balls (3)  
and small steel balls (4) are interposed between  
pressure-receiving spherical curved steel plate 5  
and pressure-applying steel plate (6) as shown in  
the drawing 1 (Fig 2-A~Fig. 2-C).

The peripheral scales of these plates are adjusted  
with that of a bottom of a structure such as a  
house or building to be built.

These plates are made of steel and used as a  
ball receiver.

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The shape of said pressure-receiving plate (5) is recessed concave formed one and another pressure applying plate (6) is convex formed one.

These opposing facing spherical plates are used as foundation of the building and also for the purpose of isolating earthquake mortions as described follows.

Pressure-receiving steel balls (3) and pressure-applying small balls (4) with (less accuracy) smaller diameter than that of pressure-receiving large balls are mounted to come in point contact in all direction.

The pressure-receiving concave curved surface (5) is supported by the pressure-receiving steel

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balls (3) and as soon as earthquake would occurs,  
the linkage of earthquake motions to the building  
is  
isolated by the rolling slide of said pressure-  
receiving steel balls (3).

As to the structure of the foundation, a concrete  
material covering all the surface of top and  
bottom steel plate with large balls and small  
balls interposed between them except curved  
surfaces of the top and bottom plates constitutes  
a colum (9) and the same apples to the foundation.

The colum (9) including the pressure-applying  
convex-curved surface is jointed to the found-  
ation including pressure-receiving concave-

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When the pressure-receiving balls (3) are rolled by the earthquake motions, small bolls (4) interposed throughout the whole periphery of said large balls (3) are rolled simultaneously, in which, as before described, the rinkage of earthquake motions to the structure or building is isolated by the rolling slide of the pressure-receiving large and small steel balls. To cope with jump-up phenomenon caused by directly unde earthquake or float-up phenomenon caused by typhoon etc., the hoop (1) is put on the foundation. The hoop (1), without striving against linkage of earthquake motions, supports colum (9) together

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with the foundation.

Because the steel balls (4) moves to the side of higher foundation pressure-receiving curved surface when the building moves due to hurricane, building mounted on the foundation, hoop (1) leans toward the wind pressure direction and increases resistance.

In addition, in order to completely achieve functions of this device, materials with properties of sodium silicate (8), etc., are filled with their properties of rust prevention, anti-freezing, and lubricant maintained are filled and functions of isolating earthquake are held semi-permanently.

The pressure applying and receiving steel plates

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are HRC50 and are free of dent when tested for  
withstanding pressure at 1 ton using pressure-  
receiving steel balls.

Concrete with strength of KGICM/700 are used.

When this invention apply to the colum with  
cross section of 80cmx80cm, the pressure-receiving  
force of 3, 200 ton is obtained.

#### STRUCTURING PROCESS OF THE INVENTION;

1. viscous materials with properties of rust pre-  
vention is spread and coated onto the plane  
steel plate on spherical curved iron and steel  
flame adjusted so as to fit to a projected st-  
ructer.
2. fit the hole cast in a projecting pole of

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position frame.

3. Insert all large balls (3) into large holes

4. Large balls (3) are kept free movement, then  
all small balls are cast in free movement.

5. Suffice the NA2S108 to concrete mortar par-  
tition plate by supply pipe, then steel plate  
and block composed iron and steel frame are  
piled on them.

6. Concaved and convexed slide blocks are put on  
press ditch (Fig. 7) and press it by short-term  
clamp bolt-nut by which concaved and convexed

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spherical surface are made.

7, Construct a provisional concrete frame, then  
put concrete into above structured frame.

8, When applying weight reached to exceeding level  
of steel plate repulsion, provisional frame is  
solved.

9, Fundamental hoop (1) is connected to combined  
hoop, tightening frame by scale of  $1/4$  (Fig. 6).

By this proceeding the hoop aligns with earth-  
quake motion and wind pressure successfully.

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WHAT I CLAIM IS;

A support structure for isolating earthquake motions, comprising a pressure-receiving steel plate of concave-curved surface adjusted with a bottom of a structure and a pressure-applying steel plate of convex-curved surface facing to said concave-curved surface, a means of interposing two types of pluralities of steel balls between said pressure-receiving curved surface and pressure-applying curved surface, one type of said plurality of steel balls are made with (less accuracy) smaller diameter than that of other

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group of balls, a means of mounting said two  
groups of balls on said pressure-receiving  
curved surface steel plate to come in point  
contact in all direction, a means of covering  
all the surface of top and bottom of steel plate  
except the curved surface with concrete by which  
forming a colum as a foundation of a const-  
ructure, a means of applying convex curved  
surface with a foundation of a construction by  
bolts and nuts, a means of mounting a aligning  
frame for said steel balls on a periphery of  
said concave curved surface to allow said balls  
to move freely, a means of isolating the linkage  
of earthquake motion to the structure by unified

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simultaneous rolling of said two types of balls  
interposed between said foundation pressure-  
receiving upper surface steel plate and oppo-  
siting pressure-applying bottom and steel plate  
surface of said colum.

2. A support structure for isolating earthquake  
motions as claimed in claim 1, a means of moving  
the structural colum vertically by foundation  
pressure-receiving curved surface thereby stop  
the propagating slide movements by shock absorber  
effect of spherical level difference (energy  
generated) by which isolating the earthquake  
motions and stopping the free movement.

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3. A support structure for isolating earthquake motions as claimed in claim 1;  
a means of giving the foundation hoop a function of suppress the foundation column not to remove from the pressure receiving balls when jump-up phenomenon caused by directly under earthquake or float-up phenomenon caused by typhoon, in this case the hoop is on the foundation.